Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

VOL. VI. NO. 15. JULY 22, 1909

THE JOURNAL OF PHILOSOPHY
PSYCHOLOGY AND SCIENTIFIC METHODS

KNOWLEDGE AND PERCEPTION

TO maintain that we accumulate knowledge about a great variety of things that discovery and observation provide us with would seem a thesis sufficiently commonplace. It was the burden, nevertheless, of a recent article which I believed to have a certain pertinence to current perplexities.[1] To say that the subject-matter of knowledge of existence is revealed by perception is only to say that there is a subject-matter about which such knowledge may, under favorable conditions, be accumulated. The purpose of the article referred to was to claim that the subject-matter of existential knowledge must be provided by perception, and that the knowledge relation is one that occurs subsequent to perception, being a relation within what I ventured to call the existential universe of discourse. As the subject-matter of all existential discussion must, if I am right, belong to the class of discovered things, things known and things unknown do not differ from each other in the matter of *percipi*. A thing which has no place in the universe of discourse is not unknown in any logical sense. Accordingly, to treat the problem of defining knowledge as a problem of perception is, to say the least, an abuse of language,[2] for something that we have come upon may be an object of total ignorance. In fact it might be said that we are continually seeking to convert objects of ignorance into objects of knowledge. Before the deciphering of the Rosetta stone, Egyptian hieroglyphics could hardly be called objects of "knowledge" in any reasonable sense; but they are no longer the objects of ignorance that they formerly were: which is to say that they were objects of perception long before they were objects of knowledge. Knowledge of electricity is something which the electrician has got because he knows how certain things in the existential universe of discourse affect one another. An object of ignorance would be one, not that we failed to discover, but one which bore no significant relation to any other member of its universe of discourse. Such an object would be an object of perception merely, and thereby, not an object of knowledge because not a term in any cognitive relation.

---

[1] "The Existential Universe of Discourse," this JOURNAL, Vol. VI., p. 175.

[2] It is not claimed that the stricter usage of the word "knowledge" here advocated will, of itself, solve any problems. The epistemological problem of perception takes for granted the subject matter of empirical knowledge, and has to do with the interpretation of that subject matter. I have already argued that such an effort at interpretation is logically vicious.

In the previous article much emphasis was put on distinguishing what I there called the immediacy and the causality aspects of things. I wish now to try to indicate the relation which these two aspects bear to one another. I must resort to the terminology of the preceding discussion.

I

If we replace the formula for sodium chloride by its more analytic equivalent intended to distinguish immediacy and causality we have $I_{Na}C_{Na} + I_{Cl}C_{Cl}$ produce salt. As the formula describes the determinate cooperation of causal factors, it is evident that the sign + connects Na and Cl, not in virtue of their immediacy, but in virtue of their causality. This can be made more evident to the eye by writing the formula as follows:

$$\begin{matrix} I_{Na} \\ C_{Na} \end{matrix} + \begin{matrix} I_{Cl} \\ C_{Cl} \end{matrix} \text{ produce salt.}$$

What now is the relation of I_{Na} to C_{Na}? It must not be forgotten that C_{Na} is not something *überhaupt,* but an instance of a particular causal efficacy operating under determinate conditions. The empirical relation of I to C should be evident to any one who admits that a blind man would not make the best assistant in a laboratory. A mutilated power of perception would interfere with the success of experiments and demonstrations. One who is going to use sulphuric acid must be able to tell that chemical from other chemicals. Salt and sugar resemble each other in one respect but not in another, and trouble has sometimes resulted from omitting the simple test of perception to learn which was which. If a particular immediacy did not serve to identify a particular causality there could be no science of the empirical world where causality was in question. And where the immediacy of one thing is very much like that of another, mistakes are frequent, and sometimes tragic. Immediacy is the sign of causality, but what causality is predicted by a given immediacy must be empirically found out. The chemist is the man who has learned to read a certain group of signs and to take advantage of them. It is a pleasure to acknowledge an obligation to Hobbes. He says: "A mark, therefore, is a *sensible object* which a man erecteth voluntarily to himself, to the end to *remember* thereby somewhat past, when the same object is objected to his sense again: as men that have passed a rock at sea, set up some mark thereby to remember their former danger and avoid it.''[3] So we might say that immediacy is a sensible aspect of a thing which, under the conditions of human experience, operates as a sign of whatever causality has been discovered to go along with it. If immediacy did not ''mean'' causality there could be no such thing as a science of nature. A critic might, however, reply: ''To be sure, the immediacy of a thing is a sign of whatever causality the thing has been discovered to have. It may, however, be the sign of a great deal of causality as yet undiscovered. How can we say that the thing has been tried in all possible combinations?'' Such a comment would express a relapse into the very point of view which appears to the present writer logically illegitimate. Undiscovered causality is something not within the existential universe of discourse. Within that universe immediacy has no relation to unobserved causality, for it can have no relation to a term devoid of content. If, then, we recognize that in situations where there is an exercise of causality, things combine to generate results because of their causality characteristics, and that the results are unaffected by the immediacy of the factors, but that immediacy, after experience has learned its lesson, is the sign of what may be expected if certain other familiar cases of immediacy are brought into conjunction, is not the real meaning of Hume's analysis of the causal relation more evident? ''No object ever discovers by the qualities which appear to the senses either the causes which produced it or the effects which will arise from it; nor can our reason, unassisted by experience, ever draw an inference concerning real existence and matter of fact.''[4] Hume's analysis recognizes that there is nothing about I_{Na} and I_{Cl} to enable us to predict in advance of experience how C_{Na} and C_{Cl} will operate. It will not be maintained, I suppose, that the explosiveness of gunpowder, the adhesive power of cement, the various utility of iron, is identical with the present ''appearance'' of any of these things. But immediacy, *after experience,* does enable us to tell cement from gunpowder. And that seems to be all that Hume was trying to say about causality.

II

A large part of the capital of ''epistemology,'' indeed its initial motive, has been the supposed difficulty of distinguishing between immediacy and possible illusion. If any case of immediacy can be either hallucination or normal perception, how shall we tell by any *a priori* definition which a given case of immediacy shall be? It is a problem of distinguishing between a real and a counterfeit, and this problem occurs often enough in practical affairs. In the world of flux and method, we test the sign function of immediacy. Dr. Johnson did so when he kicked the stone. The stone was an affair not merely of present sense-qualities, but of consequences to be arrived at in a particular way, and which might be expected by anybody familiar with stones. It is sometimes said that the difference between illusion and fact is that the latter presents us with "existence" while the former does not. Such an illusion is a case of pure immediacy. The fact comprises this same immediacy plus something else called "existence." If the letter E stand for existence, illusion and fact will be represented by I and I + E respectively. What now is the criterion for determining whether or not I is married to E? What are the tests for E? If experience can produce no information out of her store, there can be no test, for there will be no way of knowing what I alone empirically lacks, and hence no possibility of testing for it. What I alone empirically lacks is nothing on the side of immediacy, but it is the causality of which that immediacy is normally a sign. Such a case of illusion is synonymous with causal emptiness. The question, Have we or have we not here a case of existence? is the question, Does the immediacy here observed function as a sign of determinate consequences?

---

[3] "Human Nature," chapter V.

[4] "Inquiry," Section IV.

III

The aspects represented by I and C are both genuine aspects of the things that make up the empirical world. That is only to say that the empirical world is characterized by time and process. Metaphysicians have, it is true, not yet ceased to imagine a reality in which the calm of eternal self-identity leaves no place for the genesis of consequences. The theological conception of a changeless divine will survives in the metaphysical notion of a changeless absolute. But in the less exalted regions where empirical verification is possible and where methods are tested by facts, a complex future is generated by a complex present; and it is precisely the relation of present to future which C is intended here to represent. Of course, when the future arrives it will present itself in terms of immediacy, but it will include not merely that, but the conditions out of which its future must be generated, and of which that present immediacy is a sign for those who have learned to read it. Yet if immediacy is never worth appreciating on its own account, there can be no intrinsic values anywhere. Both I and C, present and future, are real aspects of experience and we can be interested in either one by itself. It sounds quite natural to ask, "Do you know the Sistine Madonna, or the coloring of Turner, or the style of Tennyson?" The question means, have you a direct and immediate acquaintance with these things? Have you appreciated their immediacy and do you preserve something of the impression? Thus the epistemologist frequently doubts whether you "know" the table or the inkstand. He does not doubt for a moment that you know it is a table or an inkstand, *i. e.*, that you know how to apply some of its causality. Such an epistemologist evidently uses the word knowledge in a sense that can not include the knowlege of the engineer, the geologist, the historian, the navigator, or the man of affairs. It is, of course, merely a question of terminology, but it is, in philosophy, worth some trouble to use one word to mean one thing, and when the word knowledge has come to mean two things we should consider which meaning we shall retain. There is no excuse for giving the word knowledge one meaning in science and another in metaphysics. What the imagined epistemologist really questions is not the range of our knowledge, but the authority of our perceptions. The word "perception" is a good word. When we mean perception let us say perception. Then we can use the word knowledge consistently to designate such things as the knowledge of the chemist, the physician, and the astronomer.

Those writers who have most systematically cultivated epistemology of the classic type have begun by taking the objective world in the relation of perception, but not in a normal and empirical relation.[5] They have described the world in terms of immediacy and formulated a "representative" theory of knowledge. To do so, however, is to leave out of account just the factors which signify the genesis of the future, that is, the factors with which that knowledge that is humanly most important is primarily concerned. Such a description can give no picture of a world in which anybody could do anything, or one thing affect another. To use again the formula

$$\genfrac{}{}{0pt}{}{I_{Na}}{C_{Na}} + \genfrac{}{}{0pt}{}{I_{Cl}}{C_{Cl}} \text{ produce salt.}$$

what the "representative" theory accomplishes is to eliminate C_{Na} and C_{Cl} as distinct aspects of sodium and chlorine. With them goes the relation of causal cooperation, leaving I_{Na} and I_{Cl} each standing alone by itself. The existence of I_{Na} and I_{Cl} is, of course, synonymous with perception, but the relation which provided the content of the chemist's knowledge has been lost. If we would do justice to the "representative theory" we should speak of a representative theory of perception, but not of a representative theory of knowledge. To define the problem of knowledge as the

[5] "The Existential Universe of Discourse," this JOURNAL, p. 181.

problem of a representative, or copying, function in which the mind or consciousness mirrors its objects, is to make the chemistry of carbon irrelevant to the knowledge of carbon, and to forget, apparently, that the knowledge of nature is something to be accumulated, transmitted, and used. Knowledge of nature is skill in reading the signs of nature, and a point of view which is unable to treat immediacy as the sign of causality can provide no basis for a theory of knowledge.

WENDELL T. BUSH.

COLUMBIA UNIVERSITY.

THE PHENOMENA OF PERIPHERAL VISION AS AFFECTED BY CHROMATIC AND ACHROMATIC ADAPTATION, WITH SPECIAL REFERENCE TO THE AFTER-IMAGE[1]

IN a recent article entitled "On the After-images of Subliminally Colored Stimuli,"[2] Professor Titchener and Mr. Pyle discuss certain after-images reported by Miss Thompson, Miss Gordon, and myself in a series of articles in the *Psychological Review.*[3]

The exact conditions under which these after-images can be obtained, as well as the correlation between them and certain related phenomena, have only recently been worked out by us and the results are as yet not published. It seems unnecessary here to discuss Professor Titchener's article in detail, since his experimental conditions differed sufficiently from ours to explain his failure to verify our results. The main variations occurred in the conditions of achromatic adaptation, in the degree of eccentricity at which the stimuli were exposed, and in the method of projecting the after-image.

One point raised by Professor Titchener, which must be discussed before we go on to our new data, is that of the variability of results at or near the outer color limits.

The method of experimentation employed in all recent zonal determinations is that of exploring the peripheral retina point by point, with a stationary stimulus and fixation and a considerable

---

[1] Given at the Baltimore meeting of the American Psychological Association, December, 1908.

[2] E. B. Titchener and W. H. Pyle, *Proceedings of the American Philosophical Society,* Vol. XLVII., No. 189, 1908, pp. 366–384.

[3] *Psychological Review,* Vol. XII., 1905, pp. 386–425; Vol. XIV., 1907, pp. 122–167; Vol. XV., 1908, pp. 25–43. A monograph giving a complete statement of our results and conclusions is at present in press. This brief statement is called forth by Professor Titchener's criticism. It should be stated that the conditions referred to were given, to a certain extent, in our earlier papers. See *Psychological Review,* XIV., 1907, pp. 129–130; XV., 1908, pp. 32–33.